Protecting the NextGen TV Consumer

Advanced EAS and AWARN Capabilities

John McCoskey
COO, SpectraRep

NEXTGENTV SUMMIT

January 2020

SpectraRep

NextGenTV™ SUMMIT

Produced by SMPTE and SBE with support from the NAB and ATSC

and the support of our host, WETA Television

WETA

JANUARY 16, 2020

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Nephi Griffith BMG
Greg Smalfelt Ch 16 Fairfax
Alex Snell BCI Digital
Peter Wharton Happy Robotz

WITHOUT THEIR VOLUNTEER EFFORTS THIS SUMMIT WOULD NOT BE POSSIBLE

Morning Program

8:00 AM - 9:00 AM	Registration and continental breakfast
8:55 AM - 9:00 AM	**Welcome from SMPTE, SBE and AES** Fred Willard, SBE Washington Kishore Persaud, SBE Baltimore
9:00 AM - 9:05 AM	**Introduction** Peter Wharton, SMPTE Membership VP Chris Lane, Chief Engineer, WETA
9:05 AM - 9:35 AM	**NextGen TV: Transforming the Consumer Experience** Lynn Claudy, SVP Technology, NAB and Chairman, ATSC Board of Directors Madeleine Noland, President, ATSC
9:35 AM - 10:00 AM	**Creating New Opportunities with NextGen TV** Joonyoung Park, VP and Fellow, DigiCAP
10:00 AM - 10:35 AM	**Improved Television Reception for Consumers** *Implementing NextGen TV Distribution Systems* John Lynch, ERI Jeff Andrew, Osborn Engineering
10:35 AM - 11:15 AM	**Benefits of a Converged Broadcast and IP Platform** Lynn Claudy, SVP Technology, NAB and Chairman, ATSC Board of Directors **Content Reception Enhancements** Richard Lhermitte, VP Solutions and Market Dev, ENENSYS TeamCast
11:15 AM - 11:30 AM	Morning Break
11:30 AM - 11:50 AM	**Consumer Applications for Combined 5G & NextGen TV Networks** Josh Arensberg, M&E Business Development, Verizon Media
11:50 AM - 12:15 PM	**Case Study: Hybrid Services at "Chicago 3.0"** Jean Macher, Harmonic
12:15 PM - 01:20 PM	Buffet Lunch

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Afternoon Program

01:25 PM - 01:45 PM	**Protecting the NextGen TV Consumer** *Advanced EAS and AWARN Capabilities* John McCoskey, SpectraRep
01:45 PM - 02:15 PM	**Monetizing the NextGen TV Consumer** *Addressable Advertising and Analytics* Rick Ducey & Mark Fratrik, BIA
02:20 PM - 03:20 PM	**Personalizing the Consumer Experience** *Interactive and Personalized Features* Mark Corl, Triveni Digital Greg Jarvis, Fincons So Vang, NAB Pete Van Peenan, Pearl TV
03:25 PM - 03:40 PM	Afternoon Break
03:40 PM - 04:10 PM	**The Consumer Out-of-Home Experience** *Mobile & Automotive Applications and FeMBMS (5G Broadcast)* Thomas Janner, Product Management & R&D Director, Rhode & Schwarz
4:10 PM - 4:35 PM	**The ATSC 3.0 Roadmap** Lynn Claudy, SVP Technology, NAB and Chairman, ATSC Board of Directors Madeleine Noland, President, ATSC
4:35 PM - 5:00 PM	**The Consumer Technology Roadmap** Brian Markwalter, SVP Research and Standards The Consumer Technology Association
5:00 PM - 6:00 PM	**Station Group and Industry Deployment Plans** *Advanced Capability Implementation Strategies* Skip Pizzi, VP Technology Education & Outreach, NAB (Moderator) Michael Bouchard, VP Technology Strategy, ONE Media / Sinclair Stacey Decker, CTO, Public Media Group Sasha Javid, COO, The Spectrum Co
6:00 PM - 8:00 PM	**Cocktail Reception** Busboys and Poets 4251 S. Campbell Ave.,Shirlington *Heavy Hors d'oeuvres and open bar*

What is Advanced Emergency informAtion (AEA)?

- Enables broadcasters to deliver emergency-related data and media to viewers
  - Text, images, video, interactive interfaces
  - Viewer management of messages
- Supplements and enhances EAS, but does not replace FCC emergency messaging regulations or practices
- Ability to geo-target alerts (for receivers that are location-aware)
- Ability to wake-up devices in stand-by mode
- Defines video and audio watermarks that are capable of enabling receivers to access AEA rich media via broadband or a subset of AEA information directly in the watermark.
- Ability to send public-facing AEA messages intended for consumers, and non-public-facing messages, intended for first responders or restricted audiences.

What is AWARN ?

Advanced Warning and Response Network

- The Advanced Warning and Response Network (AWARN) Alliance
- A cross-industry, international coalition formed to create the world's most advanced emergency messaging system
- Members include:
  - Commercial and public broadcasters who reach over 90 percent of U.S. households
  - Public safety agencies (FEMA, DHS, APCO, NWS, NCMEC)
  - National trade associations
  - Consumer technology manufacturers
  - B2B technology companies

Key ATSC 3.0 standards for AEA

- A/321 - System Discovery and Signaling
  - bootstrap
  - “wakeup” field
- A/331 - Signaling, Delivery, Synchronization and Error Protection
  - service signaling and IP delivery of services and content, including AEA.
  - A specialized emergency messaging approach tailored for broadcast
  - Flexibility to cover a broad range of messaging requirements, including international, multilingual, and multimedia capabilities

AEA wake-up function

The Bootstrap is the initial discovery and entry point in the ATSC 3.0 waveform

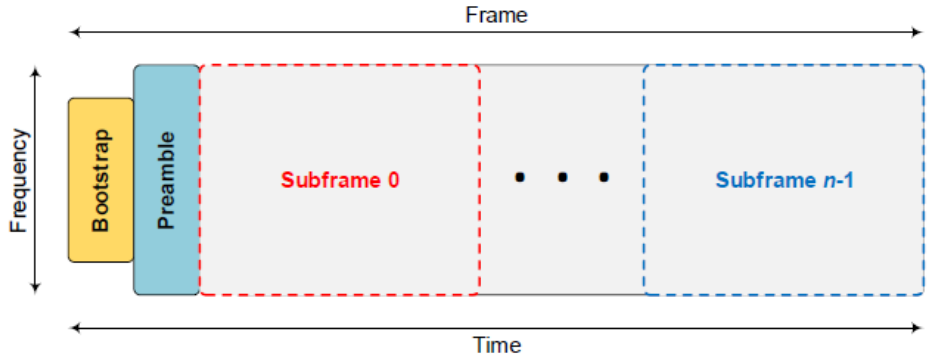
Wake-up Field is comprised of two bits in the Bootstrap

Two bits = 4 wakeup states…one negative and 3 positive

- Change in state is what matters
- Designed to avoid nuisance factor and extend battery life

Note that there is one Bootstrap per RF band

- Broadcasters that are channel-sharing must coordinate use of the wake-up bits



Value	Meaning
'00'	No emergency to wake up devices is currently signaled
'01'	Emergency to wake up devices - setting 1
'10'	Emergency to wake up devices - setting 2
'11'	Emergency to wake up devices - setting 3

The AEA Table (AEAT)

Defines elements and attributes
Of alert messages:

- Who gets it?
- When?
- Alert Summary
- Where?
- Alert narrative
- Live media
- File-based media

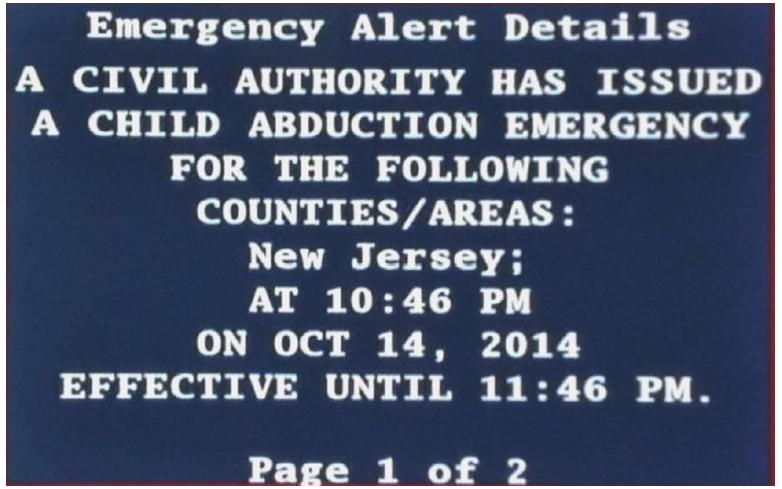
Element or Attribute Name	Use	Data Type	Short Description
AEAT			Root element of the **AEAT**
AEA	1..N		Advanced Emergency Alert formatted as AEA-MF.
@AEAid	1	string	The identifier of AEA message.
@issuer	1	string	The identifier of the broadcast station originating or forwarding the message.
@audience	0..1	string	The intended distribution of the AEA message.
@AEAtype	0..1	string	The category of the message.
@refAEAid	0..1	string	The referenced identifier of AEA message. It shall appear when the @AEAtype is "update" or "cancel".
@priority	1	unsignedByte	The priority of the message
Header	1		The container for the basic alert envelope.
@effective	1	dateTime	The effective time of the alert message.
@expires	1	dateTime	The expiration time of the alert message.
EventCode	1	string	A code identifying the event type of the AEA message.
@type	0..1	string	A national-assigned string designating the domain of the code (e.g. SAME in US, ...)
EventDesc	0..N	string	The short plain text description of the emergency event (e.g. "Tornado Warning" or "Tsunami Warning".
@lang	1	string	The code denoting the language of the respective element of the EventDesc
Location	1..N	string	The geographic code delineating the affected area of the alert message
@type	1	string	A national-assigned string designating the domain of the code (e.g. FIPS in US or "SGC" in Canada...)
AEAtext	1..N	string	Contains the specific text of the emergency notification
@lang	1	language	The code denoting the language of the respective element of the alert text
LiveMedia	0..1		
@bsid	1	unsignedShort	Identifier of the Broadcast Stream contains the emergency-related live A/V service.
@serviceId	1	unsignedShort	Integer number that identifies the emergency-related A/V Service.
ServiceName	0..N	string	A user-friendly name for the service where the LiveMedia is available
@lang	1	string	The language of the text described in the ServiceName element
Media	0..N		Contains the component parts of the multimedia resource.
@lang	0..1	language	The code denoting the language of the respective element **Media**
@mediaDesc	0..1	string	Text describing the type and content of the media file
@url	1	anyURI	The identifier of the media file
@contentType	0..1	string	MIME-Type of media content referenced by Media@url
@contentLength	0..1	unsignedLong	Size in bytes of media content referenced by Media@url

Example AEA Message Types

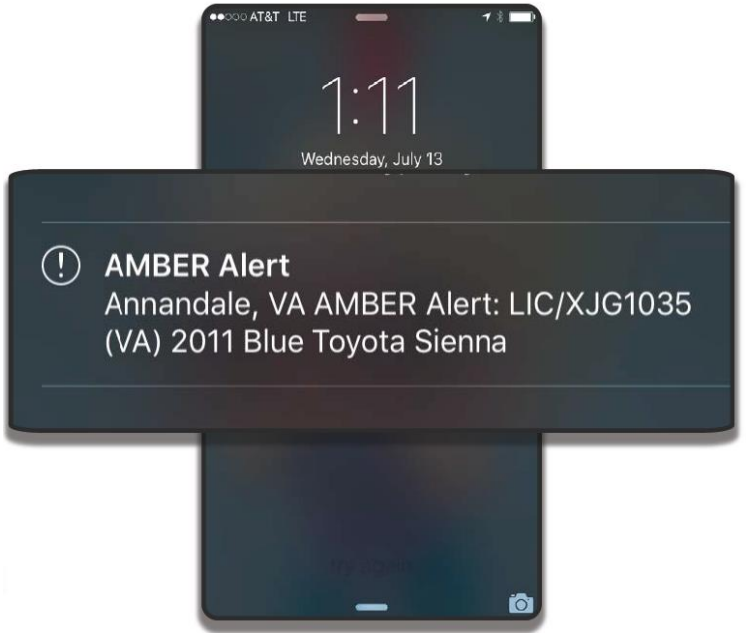
Types of Emergency Messages	Examples
"Timely Warnings" – the types of messages issued by campuses – extremely short fuse events.	School lockdowns; active shooter, etc.
Emergency Warnings – EAS, public safety and weather alerts.	Weather alerts, AMBER alerts, etc.
Emergency Information - EI is a broader category of information and instructions. EI may be issued even though there is no "alert." EI may also enhance an alert with more information on what is happening, what the response organization is doing, and what else the public should do for its safety.	Safety messages, follow-on evacuation instructions, post-emergency information, media communications from authorities, etc.
Bulletins and Advisories – information that may not fit into the category of an "alert" or "EI" but still represents information of important interest to the viewer or community.	School closing lists, major traffic/road information, list of shelters, emergency preparedness info, etc.

Alerting today

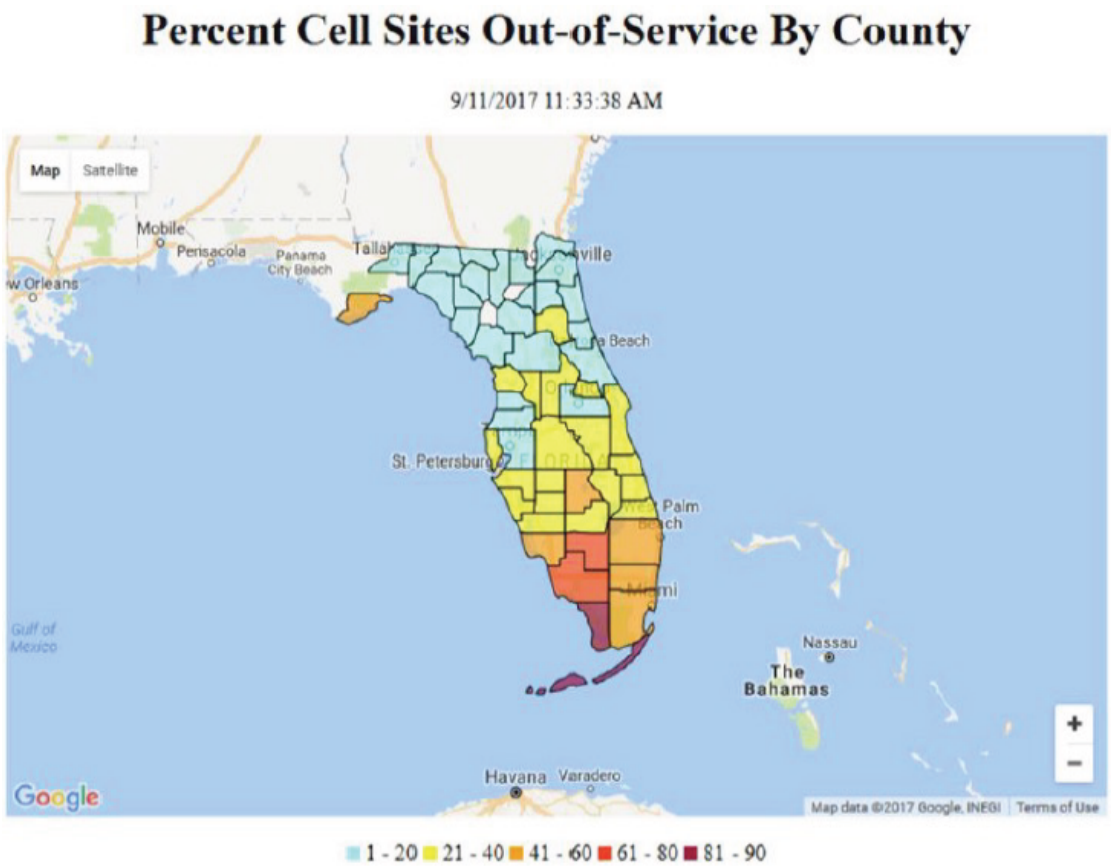
- Broadcast/MVPD text/audio EAS
- Mobile Wireless Emergency Alerts (WEA)



- Wireless vulnerability
  - Fragile infrastructure
  - Dependent on commercial power
  - Subject to congestion, throttling, and blocking
- Broadcast resiliency
  - Ruggedized infrastructure
  - High availability
  - True multicast
  - Backup power systems



Resiliency example



The day after Hurricane Irma hit Southwestern Florida, only one full power station (out of 96) was off-the air in Florida, none in the Miami-Dade DMA.

– Source: FCC *Hurricane Irma Communications Status Report for Sept. 11, 2017*

"And imagine a world in which our emergency alert system was far more advanced, tailoring alerts to particular neighborhoods and waking up sleeping devices to warn consumers of imminent emergencies."

-FCC Chariman Ajit Pai before unanimous vote to approve Next Gen NPRM, 2/23/17

1st Gen AWARN (c. 2016)

AWARN
Advanced Warning and Response Network

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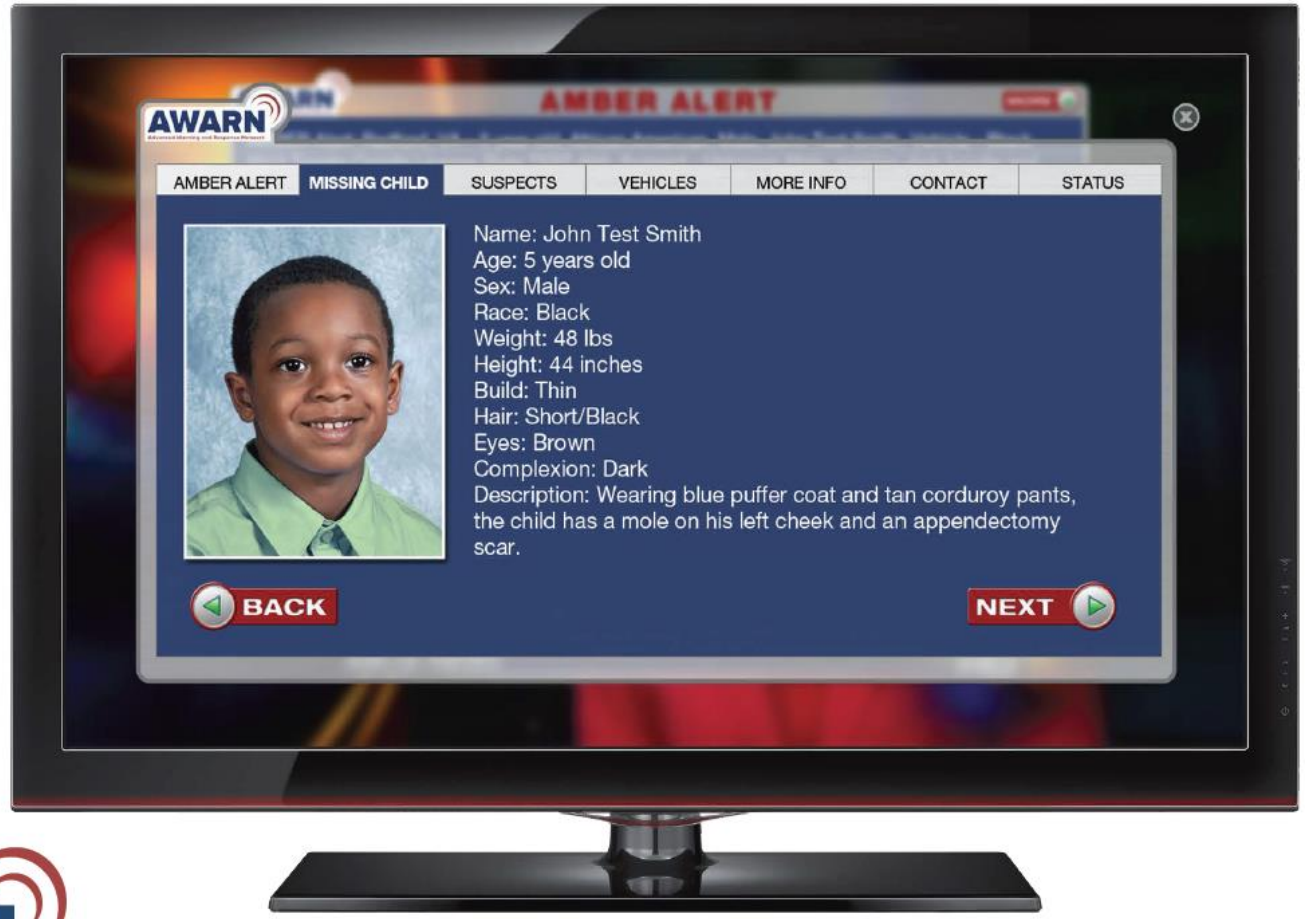

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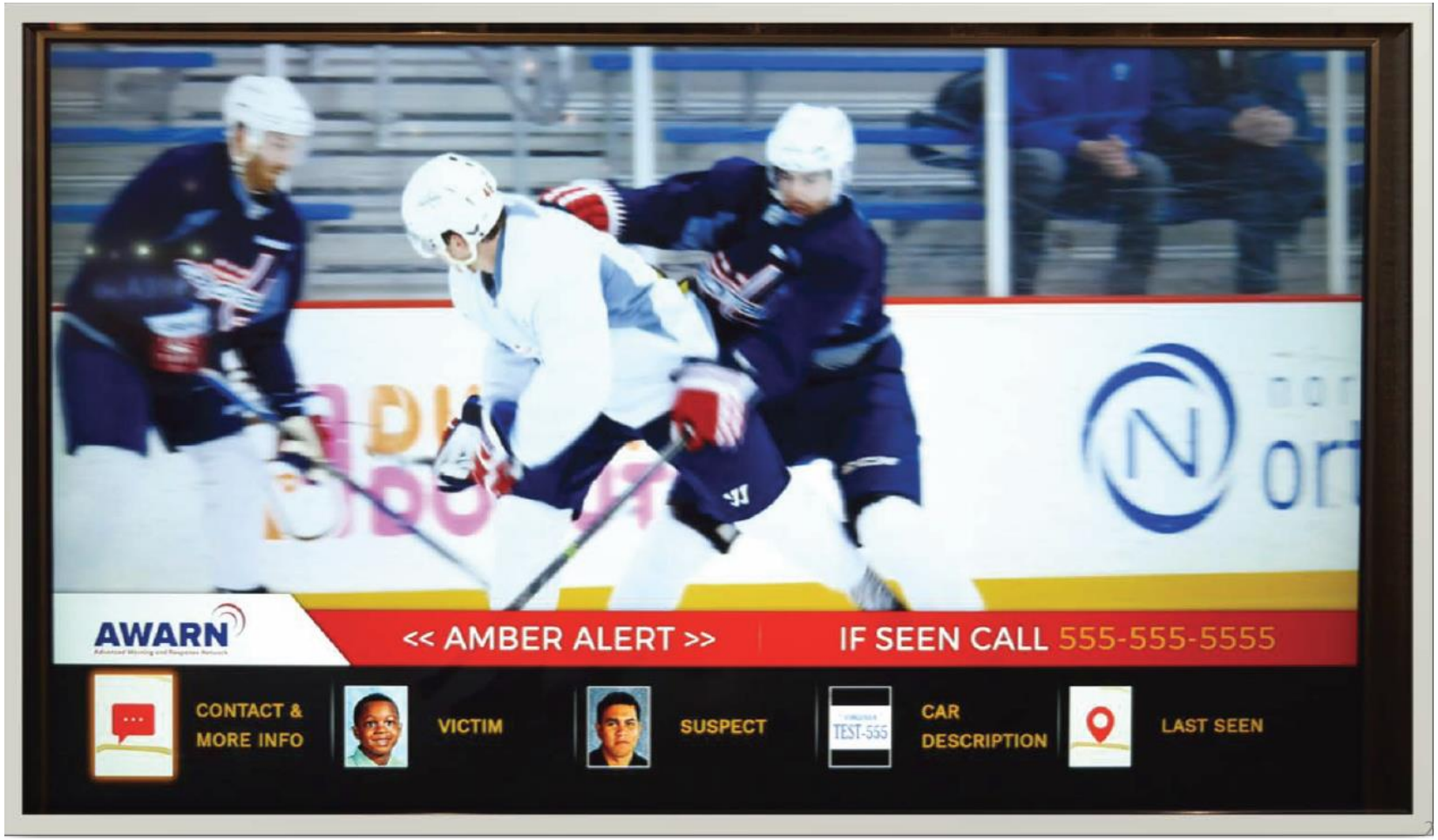
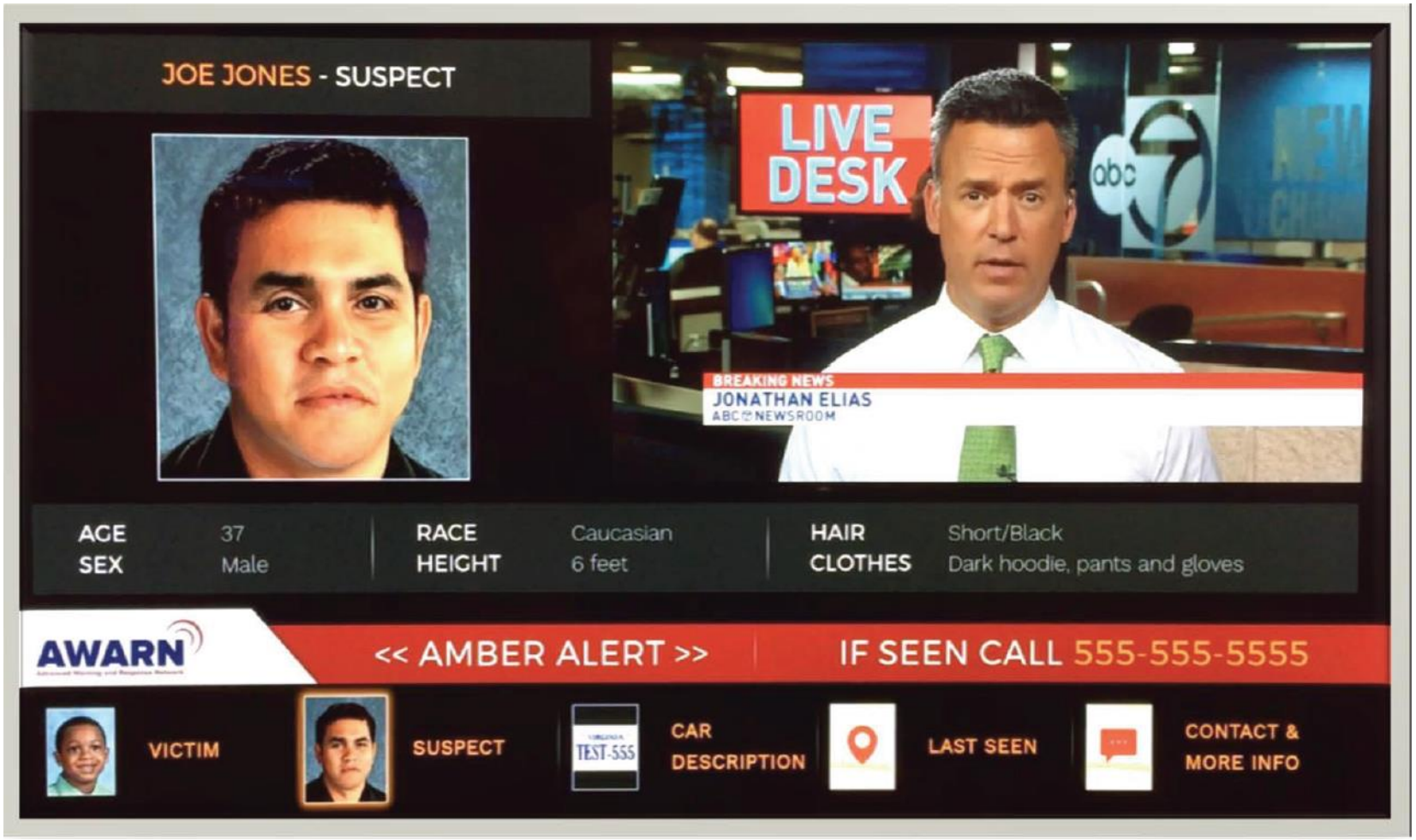
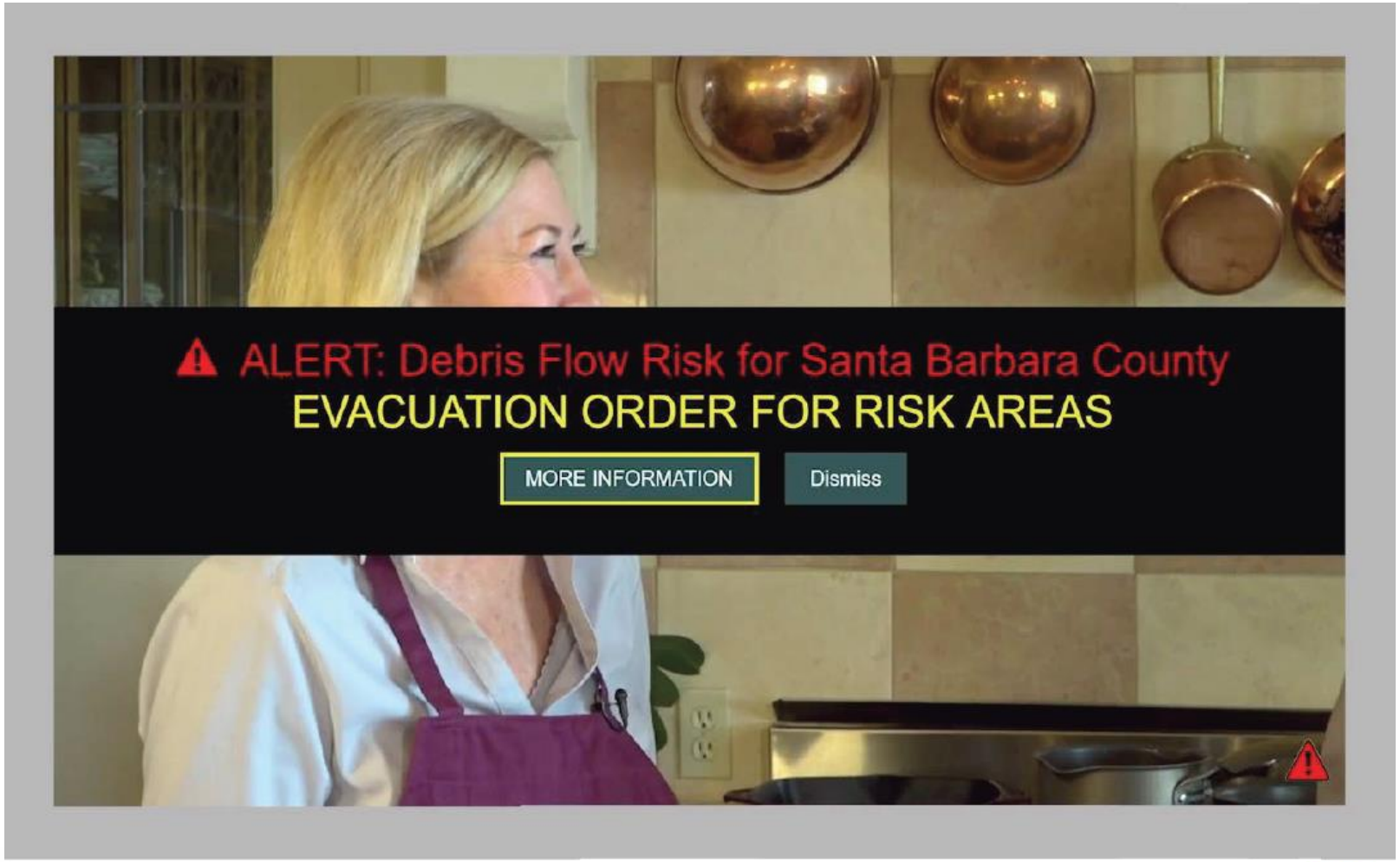
2nd Gen AWARN w/ HTML5 (c.2017/18)



2nd Gen AWARN w/ HTML5 (c.2017/18)



Current Gen AWARN



AWARN

ALERT: Debris Flow Risk for Santa Barbara County

EVACUATION ORDER FOR RISK AREAS

- Shelter location:
  Goleta Valley Community Center,
  5679 Hollister Ave
- Road Closures:
  Hwy 101 closed from Milpas St. Santa Barbara to Hwy 150 in Carpinteria
- Twitter updates follow:
  @SBCountyOEM
- Text shelter address

Live Coverage | **Evacuation Map** | Shelters | Dismiss

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Live Coverage | Evacuation Map | **Shelters** | Dismiss

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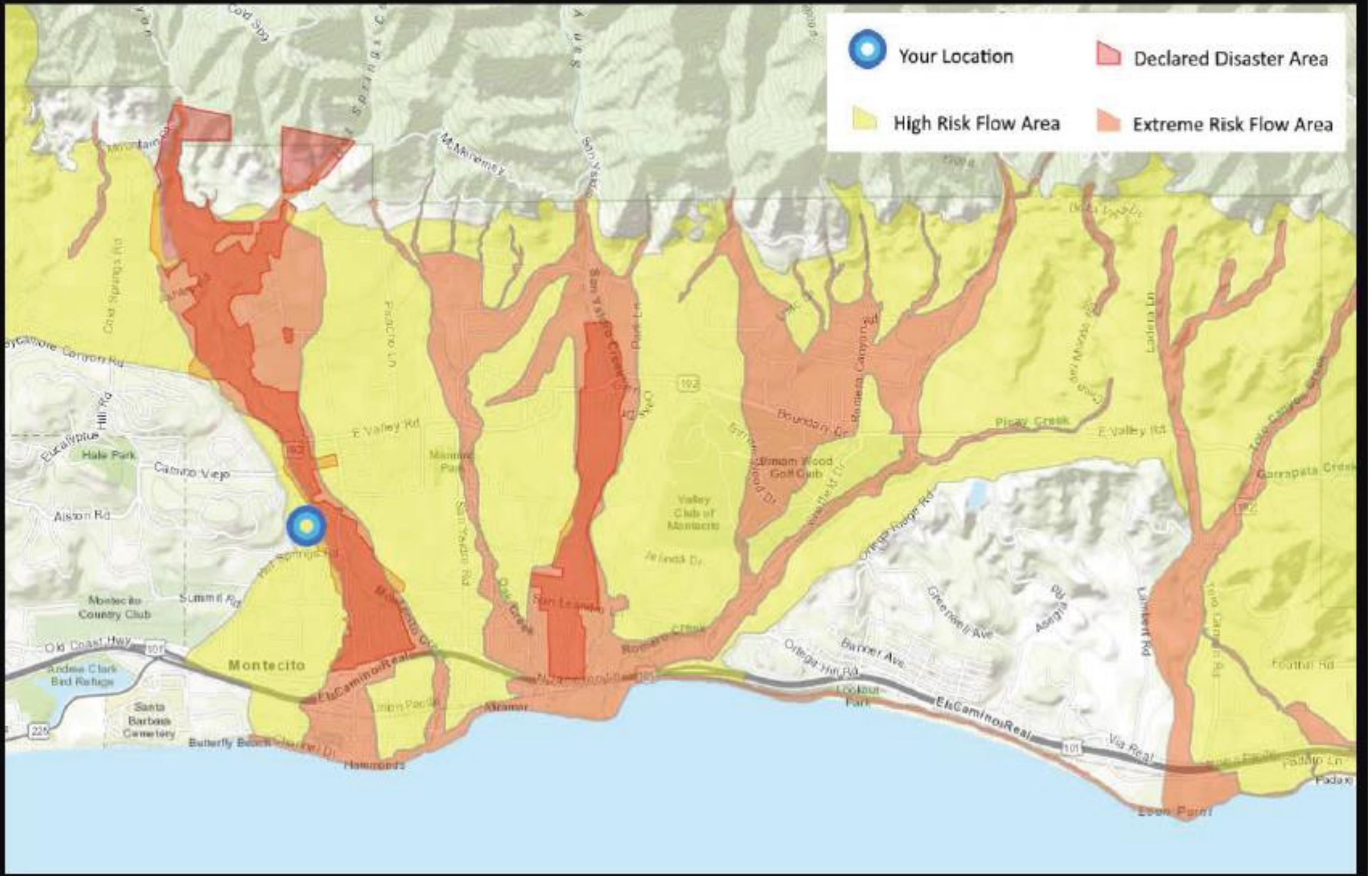
Live Coverage | Evacuation Map | Shelters | Dismiss

Post-event AWARN example

AWARN DISASTER INFORMATION from Santa Barbara County OEM

Declared Disaster Zones and Power Outages

- Declared disaster zones: Areas in DARK RED on map
- No entry for general public. Violators will be subject to arrest
- Property owners and renters permitted into area with proof of residence
- Twitter updates follow: @SBCountyOEM
- Text shelter address



Disaster Zones | Power Outages | Live Coverage | Dismiss

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Disaster Zones | Power Outages | **Live Coverage** | Dismiss

Ongoing:
AEI – Advanced Emergency “Informing”

- Ties alerting to the newsroom
- Re-thinks newsroom workflows and interfaces
- Tools & templates for consistent, rapid content assembly & management
- Integration of real-time and NRT content

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FROM THE SMPTE WASHINGTON DC SECTION
THANK YOU